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element 40 into two streams. One stream is applied to channel encoder 41, and the other stream is applied to channel encoder 51. The output of channel encoder 41 is applied to space-time block encoder 42, and then to mapper and pulse shaper 43 and antennas 44 and 45. Similarly, the output of channel encoder 51 is applied to space-time block encoder 52, and then to mapper and pulse shaper 53 and antennas 54 and 45. Generalizing, information symbols from a transmitting terminal are split into L parallel streams. Stream l is then encoded using a channel code with rate R_l and then coded with a space-time block encoder with N transmitting antennas. The coding rates can be the same, but an advantage accrues when the coding rates are chosen such that $R_1 < R_2, < \mathrm{L}\ , < R_L$. In such a case, symbols transmitted in stream l will have better immunity against channel errors as compared to symbols transmitted in stream u where $u>l$. The base station receiver is assumed to be equipped with at least L receive antennas. The base station receiver treats each stream as a different user and uses the iterative interference cancellation techniques disclosed above, or the ones disclosed in the aforementioned '163 application. Since the first stream has the smallest coding rate R_l, it has the best immunity against the channel errors and most likely it will be error free. The receiver then uses the decoded symbol of stream l to subtract the contributions of the first stream in the total received signals, while decoding the remaining L-l streams. In decoding the remaining L-l streams, the decoder decodes signals from the second stream first, since it has the best immunity against channel errors among the remaining L-l streams (due to its lowest rate, R_2 from among the remaining streams). Then the receiver uses the decoded symbols for the second stream to cancel out its contribution in the ~~received signal. This process is repeated until all streams are decoded.~~

IN THE CLAIMS (Entire set of claims):

3. A transmitter comprising:

a demultiplexer responsive to an applied input signal for developing a plurality of at least two signal streams, and

a like plurality of channel coding/space-time coding transmitters, each responsive to a different signal stream of said plurality of signal streams.

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4. The transmitter of claim 3 where each of said channel coding/space-time coding transmitters comprises:

a channel coder of rate R_i,

a space-time encoder responsive to output signal of said channel code encoder,

a modulator responsive to said space time-encoder,

pulse shaping circuitry responsive to said modulator, and

at least two antennas for transmitting a space-time coded signal created by said space-time encoder, modulated by said modulator, and conditioned by said pulse shaping circuitry.

5. The transmitter of claim 4 where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i i=1,2,...,L, that are not identical to each other.

6. The transmitter of claim 4 where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i i=1,2,...,L, that are such that $R_1 > R_2 > \cdots > R_L$.

7. The transmitter of claim 3 where said channel code encoder performs trellis encoding.

8. The transmitter of claim 3 where said channel code encoder performs convolutional encoding.

Please add the following claims:

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9. A transmitter comprising:

a demultiplexer responsive to an applied input signal for developing an L plurality of at least two signal streams, and

a like plurality of channel coding encoders, each responsive to a different one of said plurality of signal streams,

a like plurality of a space-time coding transmitters, each responsive to a different one of said channel conding encoders.

10. The transmitter of claim **9** where each of said space-time coding transmitters comprises:

a space-time encoder responsive to input signal of said space-time coding transmitter,

a modulator responsive to said space time-encoder,

pulse shaping circuitry responsive to said modulator, and

at least two antennas for transmitting a space-time coded signal created by said space-time encoder, modulated by said modulator, and conditioned by said pulse shaping circuitry.

11. The transmitter of claim **9** where each channel coder $i=1,2,...,L$ in said L plurality of channel coders develops codes at rate R_i, and the rates for different values of index i are not identical to each other.

12. The transmitter of claim **11** where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i $i=1,2,...,L$, that are such that $R_1 > R_2 > \cdots > R_L$.

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13. The transmitter of claim **11** where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i $i=1,2,...,L$, that are such that $R_1 < R_2 < \mathrm{L} < R_L$.

14. The transmitter of claim **9** where said channel code encoder performs trellis encoding or convolutional encoding.--.

REMARKS

The specification was objected to because of a number of informalities. They are corrected herein by deleting the words "is then" in page 5, line 15, and by reversing the

relationship order in the equation found in page 5, line 24 and in page 14, line 18. Additionally, the word "Time" is included in the title, and information that was unknown at time of filing is supplied in page 1, line 14, and page 4, line 9. Other than the missing information, all of the changes are simply corrections of typographical nature, which do not narrow the scope of the outstanding claims. As amended, it is believed that the objection to the specification has been overcome.

Claims 8 was rejected under 35 USC 112 because it depends on a cancelled claim. This error is corrected.

Claims 3, 4 and 7 were rejected under 35 USC 102 as being anticipated by Calderbank et al, US Patent 6,127,971. Applicants respectfully traverse.

The Examiner asserts that the reference teaches a plurality of "channel coding/space-time coding transmitters," pointing to element groupings such as 110, 110-1 and 110-2. It is respectfully submitted that while each of the groupings is a "transmitter," it is NOT a "channel coding/space-time coding" transmitter. Based on the disclosure in the specification, a "channel coding/space-time coding" transmitter is an arrangement that comprises a channel coding element, following by a space-time coding element, and followed still by some means that make the element a "transmitter." The reference, in contradistinction, teaches a single encoding element in the aforementioned grouping (to wit, element 110) followed by elements 110-1 and 110-2 that make the grouping a "transmitter." In other words, ithe cited patent does NOT have a serial connection of two encoding elements. Accordingly, it is respectfully submitted that claim 3 is neither anticipated, nor rendered obvious, by the cited reference.

Claim 4 defines the invention more specifically, providing detail regarding the elements that follow the space-time coding element. For the reasons set forth for caim 3, it is believed that claim 4 is, similarly, not be anticipated, or rendered obvious, by the cited reference.

Regarding claim 7, it is noted that the reference to trellis coding in the cited patent relates to the space-time coding that is carried out in the "one and only" coding element is each transmitter. Accordingly, it is believed that claim 7 is also not anticipted, or rendered obvious, by the cited reference.

Claims 3 and 8 are rejected under 35 USC 102 as being anticipated by Kotzin et al, US Patent 6,173,005. The Examiner asserts that the reference teaches a demultiplexer, citing element 803 in FIG. 8; and that the reference also teaches a plurality of "channel coding/space-time coding transmitters," pointing to elements 304, 806 and 808 and to text at col. 14, line 3. Applicants respectfully traverse.

FIG. 8 of the reference describes a transmitter. Data is provided by processor 305 to element 304, where it is encoded. The encoded data is applied to element 308, where interleaving action takes place. The col. 14, line 3 text states that the interleaver of element 308 effectively provides a form of space-time coding. Thereafter, elements 803 splits the data into two channels, wth one channel applied to transmitting element 806, and the other channel applied to transmitting element 808. The operative fact here is the all of the encoding is done first, and then data is split into two streams. In contradistinction, claims 3 and 8 specify the reverse: first splitting the data into streams, and then encoding it. Therefore, it is respectfully submitted that the Kotzing et al reference neither anticipates claims 3 and 8 nor renders them obvious.

Claim 8 was rejected under 35 USC 103 as being unpatentable over the Calderbank et al reference used in rejecting claim 3. The Examiner correctly assumed claim 8 to be dependent on claim 3. Applicants respectfully traverse the rejection. The above remarks demonstarte that claim 3 is neither anticipated nor rendered obvious by the Calderbank et al reference. It logically follows that claim 8 – which includes an additional limitation – is also not obvious in light of Calderbank et al.

Claim 7 was rejected under 35 USC 103 as being unpatentable over the Kotzin et al reference used in rejecting claim 3. Applicants respectfully traverse. The above remarks demonstarte that claim 3 is neither anticipated nor rendered obvious by the Kotzin et al reference. It logically follows that claim 7 – which includes an additional limitation – is also not obvious in light of Calderbank et al.

Applicants are appreciative that the Examiner found claim 5 and 6 allowable, if rewritten in independent form. Since applicants trust that the Examiner will agree with applicants' present remarks and will rescind the rejections to claim 3. That would make claims 5 and 6 allowable without amendment and, therefore, they are not amended at this time.